

In the Claims:

The following listing of claims replaces all prior versions and listings of the claims

1. – 16. (canceled)

17. (Currently amended) An arrangement (1) for ~~controlling~~ real-time control of a welding operation that utilizes a welding head (11), said arrangement comprising:

a device (2) for monitoring a welding area of an object (14) ~~in connection with~~ during welding, said device (2) comprising[[:]]

means for reproducing (3) the welding area;

at least one filter (4) arranged in front of or in the reproduction means (3); and

means, other than said welding head (11), for illuminating (5) the welding area with ultraviolet radiation ~~of a~~ having at least one predetermined ultraviolet wavelength; [[and]]

wherein said filter (4) ~~comprising~~ comprises a band-pass filter configured for filtering around the predetermined ultraviolet wavelength ~~range~~;

computer means (9) for processing an image produced by the reproduction means (3); and

means (10), responsive to said computer means (9), for controlling one of[[:]] at least one welding parameter and the position of the welding head (11) ~~of the welding means (7)~~ on the basis of information from the image.

18. (Currently amended) The arrangement as recited in claim 17, wherein said image-processing means (9) is adapted to measure [[the]] weld width from the image.

19. (Currently amended) The arrangement as recited in claim 17, wherein said image-processing means (9) is adapted to detect at least one of[[:]] the position of [[the]] a welding joint, a gap between two parts to be welded together, and [[the]] geometry of [[the]] a weld melt.

20. (Currently amended) A method for monitoring a welding area of an object (14) ~~in connection with~~ during a welding process that utilizes a welding head, said method comprising:

during said welding process, illuminating the welding area with ultraviolet radiation of a predetermined ultraviolet wavelength by means of a source other than said welding head;

using a means (3) for reproduction, reproducing the welding area while it is being welded; and

filtering radiation from the welding area in a direction toward ~~[[a]]~~ said means (3) for said reproduction, said filtering being carried out using a band-pass filter (4) around the predetermined ultraviolet wavelength.

21. (Previously presented) The method as recited in claim 20, wherein said predetermined wavelength lies within a wavelength range of 280-450 nm.

22. (Previously presented) The method as recited in claim 20, wherein said predetermined wavelength is shorter than 400 nm.

23. (Previously presented) The method as recited in claim 20, wherein said predetermined wavelength is shorter than 380 nm.

24. (Previously presented) The method as recited in claim 20, wherein said predetermined wavelength is longer than 300 nm.

25. (Previously presented) The method as recited in claim 20, wherein said predetermined wavelength is approximately 365 nm.

26. (Previously presented) The method as recited in claim 20, wherein said predetermined wavelength is approximately 320 nm.

27. (Currently amended) The method as recited in claim 20, wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than 90 nm FWHM around said predetermined wavelength.

28. (Currently amended) The method as recited in claim 20, wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than 70 nm FWHM around said predetermined wavelength.

29. (Currently amended) The method as recited in claim 20, wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than 30 nm FWHM around said predetermined wavelength.

30. (Currently amended) The method as recited in claim 20, wherein said band-pass filter (4) is adapted for filtering within a range which is approximately 10 nm FWHM around said predetermined wavelength.

31. (Currently amended) The method as recited in claim 20, further comprising:
processing an image produced by the reproduction means (3); and
controlling at least one of welding parameters and the position of [[a]] said welding head (11) based on information ~~processed~~ obtained from the processed image.

32. (Currently amended) The method as recited in claim 31, wherein the width of [[the]] a reproduced welding joint ~~reproduced~~ is measured, and said welding parameters and position of the welding head (11) are controlled on the basis of the measured weld width.

33. (Currently amended) The method as recited in claim 32, wherein the measured weld width is compared with one or more reference values[[,]] and, in the event of deviation from an approved range being detected, said welding parameters and position of the welding head (11) are ~~regulated~~ adjusted.

34. (Currently amended) The method as recited in claim 31, wherein the position of [[the]] a welding joint and a gap between two parts to be welded together and the geometry of [[the]] a weld melt are detected, and said welding parameters and position of the welding head are controlled on the basis ~~of~~ this information thereof.

35. (Canceled) ~~A computer program comprising computer program segments that implement a method, when the program is run on a computer, for monitoring a welding area of an object (14) in connection with a welding process, said method comprising: illuminating the welding area with ultraviolet radiation of a predetermined ultraviolet wavelength; reproducing the welding area; and filtering radiation from the welding area in a direction toward a means (3) for said reproduction, said filtering being carried out using a band pass filter (4) around the predetermined ultraviolet wavelength range.~~

36. (Canceled) ~~A computer program product comprising computer program segments stored on a computer readable means that implement a method, when the program is run on a computer, for monitoring a welding area of an object (14) in connection with a welding process, said method comprising: illuminating the welding area with ultraviolet radiation of a predetermined ultraviolet wavelength; reproducing the welding area; and filtering radiation from the welding area in a direction toward a means (3) for said reproduction, said filtering being carried out using a band pass filter (4) around the predetermined ultraviolet wavelength range.~~

37. (Currently amended) A device (2) for monitoring a welding area of an object (14) ~~in~~ connection with during a welding operation that utilizes a welding head, said device comprising:

means, other than the welding head, for illuminating (5) the welding area with ultraviolet radiation having at least one predetermined wavelength;

means for reproducing (3) the welding area; and

at least one filter (4) arranged in front of or in the reproduction means (3), said filter (4) comprising a band-pass filter configured for filtering around [[a]] said predetermined wavelength; ~~within the ultraviolet wavelength range.~~

wherein said means for illuminating and said means for reproducing are positioned generally proximate the welding head during operation thereof.

38. (Canceled) ~~The device as recited in claim 39, wherein said illumination means illuminates the welding area with ultraviolet radiation at a predetermined ultraviolet wavelength and said band pass filter filters light around the predetermined ultraviolet wavelength, said predetermined ultraviolet wavelength thereby characterizing a wavelength of the band pass filter.~~

39. (Currently amended) The device as recited in claim [[38]] 37, ~~further comprising~~ wherein said illumination means ~~illuminating~~ illuminates the welding area with ultraviolet radiation across a predetermined ultraviolet wavelength range that includes said predetermined ultraviolet wavelength.

40. (Previously Presented) The device as recited in claim 39, wherein the wavelength of the band-pass filter is centered with respect to the predetermined ultraviolet wavelength at which the illumination means emits rays.

41. (Previously Presented) The device as recited in claim 39, wherein the wavelength of the band-pass filter lies within a wavelength range of 280-450 nm.

42. (Previously Presented) The device as recited in claim 39, wherein the wavelength of the band-pass filter is shorter than 400 nm.

43. (Previously Presented) The device as recited in claim 39, wherein the wavelength of the band-pass filter is shorter than 380 nm.

44. (Previously Presented) The device as recited in claim 39, wherein the wavelength of the band-pass filter is longer than 300 nm.

45. (Previously Presented) The device as recited in claim 39, wherein the wavelength of the band-pass filter is approximately 365 nm.

46. (Previously Presented) The device as recited in claim 39, wherein the wavelength of the band-pass filter is approximately 320 nm.

47. (Previously Presented) The device as recited in claim 39, wherein the band-pass filter is adapted for filtering a wavelength range that is smaller than 90 nm FWHM around said predetermined ultraviolet wavelength.

48. (Previously Presented) The device as recited in claim 39, wherein the band-pass filter is adapted for filtering a wavelength range that is smaller than 70 nm FWHM around said predetermined ultraviolet wavelength.

49. (Previously Presented) The device as recited in claim 39, wherein the band-pass filter is adapted for filtering a wavelength range that is smaller than 30 nm FWHM around said predetermined ultraviolet wavelength.

50. (Previously Presented) The device as recited in claim 39, wherein the band-pass filter is adapted for filtering a wavelength range that is smaller than 10 nm FWHM around said predetermined ultraviolet wavelength.

51. (Previously Presented) The device as recited in claim 39, wherein said reproduction means (3) comprises a camera.

52. (Previously Presented) The device as recited in claim 51, wherein said device further comprises a diaphragm (16) arranged in front of the camera.

53. (Previously Presented) The device as recited in claim 51, wherein said device comprises an attenuating filter.

54. (Previously Presented) The device as recited in claim 53, wherein said diaphragm (16) has a relatively small aperture means (9) for processing an image produced by the camera (3), which aperture means (9) comprises a central processing unit (CPU) or computer.

55. (Currently amended) A device (2) for monitoring a welding area of an object (14) ~~in connection with~~ during a welding operation that utilizes a welding head, said device comprising:

means for reproducing (3) the welding area;
at least one filter (4) arranged in front of or in the reproduction means (3); and
means, other than the welding head, for illuminating (5) the welding area with ultraviolet radiation; [[and]]

wherein said filter (4) ~~comprising~~ comprises a band-pass filter configured for filtering around a wavelength within the ultraviolet wavelength range, and wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than at least one of the following: (a) 90 nm FWHM around said filter wavelength, (b) 70 nm FWHM around said filter wavelength, (c) 30 nm FWHM around said filter wavelength, and (d) 10 nm FWHM around said filter wavelength.

56. (Currently amended) A method for monitoring a welding area of an object (14) ~~in connection with~~ during a welding process that uses a welding head, said method comprising:

illuminating the welding area with ultraviolet radiation;
reproducing the welding area with a means for reproduction; and
filtering radiation from the welding area in a direction toward [[a]] said means (3) for [[said]] reproduction, said filtering being carried out using a band-pass filter (4) around a wavelength within the ultraviolet wavelength range, and wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than at least one of the following: (a) 90 nm FWHM around said filter wavelength, (b) 70 nm FWHM around said filter wavelength, (c) 30 nm FWHM around said filter wavelength, and (d) 10 nm FWHM around said filter wavelength.